

REMARKS

The Office Action dated March 7, 2006 has been carefully reviewed. Claims 1-17 were rejected. Claim 1 has been amended. Reconsideration of the rejected claims in light of the remarks presented herein is respectfully requested.

35 U.S.C. § 103 Rejections – Underwood/Powell

Claims 1-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Underwood (US Patent 6,718,535) and Powell et al. (US Application 2002/0073167). Applicants respectfully traverse the rejection. Reconsideration of claims 1-17 is respectfully requested.

Claims 1

In order to establish a prima facie case of obviousness, the proposed combination must teach each and every limitation of the claimed invention. However, the proposed combination of Underwood and Powell does not appear to teach each and every limitation of claim 1 and therefore fails to arrive at the invention of claim 1. At a high level, Applicants' claim 1 is directed to a distributed database caching system in which database queries may be satisfied by local query results derived from a cache database if the query is contained in subscribed query predicates.

As acknowledged in the Official Action, Underwood does not disclose "a remote server unit that includes a cache DBMS server." For such a teaching, the Official Action appears to rely on the central proxy server 12 and local proxy servers 22 of Powell. While the central proxy server 12 and local proxy servers 22 may cache web pages in response to HTTP requests, there appears to be no teaching in Powell regarding caching results from database queries. In particular, Powell appears to be directed to a distributed web caching system that caches digital objects 15 such as HTML files, video files, music files. See, Powell at paragraph [0029]. Further, Powell indicates that the local proxy servers 22 utilize the proxy caching protocol built into the HTTP Internet

language for proxy servers. In other words, the proxy servers 12/22 of Powell appear to merely cache digital objects 15 received as a result of HTTP requests. In response to subsequent HTTP requests for the same digital object 15, the proxy servers 12/22 may complete the HTTP request using digital objects 15 stored in a local cache database 24 instead of retrieving the digital object 15 from the server that hosts the object.

Since neither Powell nor Underwood are directed to systems which cache results from queries to a database, several limitations of claim 1 appear to be absent from the teachings of Powell and Underwood. In particular, neither Powell nor Underwood, alone or in combination, appear to disclose a remote server unit to process *queries* through a cache DBMS server which checks a data structure consisting of *query predicates*. As is understood by those skilled in the art, query predicates are the components that make up or define a database query. While the proxy server 12/22 of Powell may determine whether a digital object 15 is cached based upon the URL of a received HTTP request, one skilled in the art simply would not equate the HTTP request with the query of claim 1 or equate the URL of the HTTP request with a query predicate. Further, neither Powell nor Underwood, alone or in combination, appear to disclose a database subscription manager that *derives query results from a central DBMS server*, sends the query results to a remote server unit, and creates a subscription to *the query predicate*. Also, neither Powell nor Underwood, alone or in combination, appear to disclose adding *the query predicate to the query predicate data structure*.

Claims 2-4

Each of claims 2-4 further requires wherein the resource application layer is embedded in a database application programming interface. The Official Action appears to rely on FIG. 57 and col. 119, lines 20-25 of Underwood for a teaching of the elements of claim 2. In particular, the Official Action appears to equate the ODBC/JDBC transactions depicted in FIG. 57

with a database application programming interface and the virtual machine generally described at col. 119, lines 20-25 with the resource application layer. Even if such identified elements are equivalent (a point which Applicants do not concede), Applicants have been unable to locate any teaching in Underwood and/or Powell regarding embedding a virtual machine into the ODBC/JDBC interfaces which is what would be required based upon the proposed application of Underwood to the elements of claim 2. Since Underwood and/or Powell do not teach the limitations of claim 2, Applicant respectfully requests the rejection of claims 2-4 be withdrawn.

Claim 5

Claim 5 further requires wherein the resource abstraction layer comprises a distribution policy, wherein the distribution policy directs the queries to one of a plurality of remote server units. The Official Action appears to rely on Powell for a teaching of the distribution policy and the virtual machine of Underwood for a teaching of the resource abstraction layer. Even if such identified elements are equivalent (a point which Applicants do not concede), the proposed combination would require that the virtual machine of Underwood be combined or otherwise modified to comprise the distribution policy of Powell in order to arrive at the invention of claim 5. However, Applicants have been unable to locate any teaching, suggestion, or motivation in Underwood and/or Powell that would lead one skilled in the art to make such a modification/combination. Applicants respectfully request the rejection of claim 5 be withdrawn.

Claims 6-8

Each of claims 6-8 includes claim 1 as a base claim and is therefore allowable for at least the reasons mentioned above in regard to claim 1.

Claims 9 and 10

Each of claims 9 and 10 include various limitations related to processing queries to databases. For a teaching of such limitations, the Official Action appears to rely on Powell's master cache database 14 and local cache database 24 for a suggestion of the limitations of claim 9. Applicants respectfully disagree with the Official Actions assessment of Powell. Powell simply does not operate in the manner contemplated by the Examiner. Web caches are well known and well understood in the art. Powell is attempting to improve performance of web caches which cache web pages and other Internet resources in response to HTTP requests. Powell may disclose using databases to implement the web caches. However, despite the Official Action's position, Powell simply does not teach nor is Powell related to processing database queries from end stations 30 and caching results of such database queries. Powell instead processes HTTP requests from end stations 30 and caches the results of such requests. As a result, Powell does not teach or otherwise suggest a remote server unit having a database listener function which receives queries from an application server and a query parser function that parses the queries into structured query language queries as require by claims 9 and 10. Applicants respectfully request the rejection of claims 9 and 10 be withdrawn.

Claim 11

Claim 11 requires a *modified* database client driver that includes a resource abstraction layer. The Official Action appears to rely on Underwood col. 147, line 20 and col. 149, steps 9-10 for such a teaching. Applicants have reviewed these sections as well as others and has been unable to locate any teaching regarding the database client driver being *modified*. Furthermore, Applicants have reviewed these sections as well as others and have been unable to locate any indication of a database client driver that includes a *resource abstraction layer*. If the present

rejection is maintained, Applicant respectfully requests the Examiner to identify with more specificity where such limitations are taught by either Underwood and/or Powell.

Claim 12

Claim 12 requires deriving on a database subscription manager a plurality of *predicates* from a plurality of transactions between an application server and a central DBMS server processed by the central DBMS server, sending the plurality of *predicates* from the database subscription manager to a remote server unit, and updating a cache database according to the plurality of *predicates*. The Official Action appears to rely on Powell, FIG. 6 and paragraphs [0008] and [0085]-[0086] for a teaching of the above limitations. As mentioned above, Powell is concerned with web caches. As a result, Powell teaches HTTP requests from end stations 30 to Internet sites 35. The HTTP request may pass through a local proxy server 22 and/or a central proxy server 12 before reaching the Internet site 35 if the requested resource is not already present in either the local proxy server 22 or the central proxy server 12. However, Powell does not appear to teach a transaction between an application server and a central DBMS server as required by claim 12. Furthermore, claim 12 requires a plurality of *predicates* be derived from the plurality of transactions. Powell does not appear to teach deriving a plurality of predicates nor is it clear to the Applicants what the Official Action is equating with the predicates of claim 12. Accordingly, if the present rejection is maintained, Applicants respectfully request the Examiner identify with more specificity what elements of Underwood and/or Powell are being relied upon for a teaching of *predicates* in claim 12.

Claim 13

Claim 13 requires checking the plurality of updates to identify predicates in the cache database and locking the predicates in the cache database. For a teaching of such limitations, the

Official Action appears to rely on Powell paragraphs [0008] and [0238] and possibly Underwood col. 25 line 9, col. 123 lines 38-43, and col. 194 lines 15-16 for a teaching of such limitations. However, Applicant has been unable to locate in these identified sections or other sections of Powell and Underwood any teaching regarding *identifying predicates* in a cache database and *locking the predicates* in the cache database. If the Examiner elects to maintain the present rejection, Applicants respectfully request the Examiner to identify with more specificity where Underwood and/or Powell teach the above identified elements of claim 13.

Claim 14

Claim 14 requires receiving a commit request on the remote server unit from the application server. It appears that the Official Action is equating the application server of Underwood with the application server of claim 14 and the remote server unit with either the local proxy server 22 or the central proxy sever 12 of Powell. While such a combination if appropriate (at point the Applicants do not concede) may result in HTTP request being sent from the application server to one of the proxy servers 12, 22 such a request is not a *commit request*. As is well understood in the art, a commit request is a request for changes to be committed. In a web cache environment such as described in Powell, end stations 30 send HTTP requests in order to retrieve digital objects 15 from Internet sites 35 and the retrieved digital objects 15 may in turn be cached by the proxy servers 12, 22. However, there appears to be no teaching in Powell of an end station 30 making changes to the retrieved objects 15 and then sending a request to the proxy servers 12, 22 to commit such changes. In regards to claim 14, neither Powell nor Underwood appear to teach receiving a *commit request* on the remote server unit from the application server.

If the Examiner elects to maintain the present rejection, Applicants respectfully request the Examiner to identify with more specificity what in Powell and/or Underwood is being relied upon for a teaching of a commit request, a remote server unit, and an application server.

Claim 16

Claim 16 requires mapping rows and *associated subscriptions* with a unique identifier for each row and mapping column values to *subscribed predicates*. For such teachings, the Official Action appears to rely on Underwood col. 55, line 40-63 and col. 54, lines 60-65. Underwood in these sections describes the AFPLPersistableObj abstract class methods and the VBPersistObj interface class methods. Generally, the implementation of these classes enable business objects to be stored in a database and later retrieved from a database. As such, the described methods include methods for manipulating business objects in relation to database tables and mapping attributes of the business objects to database tables. However, Applicants have been unable to locate in Underwood and/or Powell any teaching regarding mapping rows and *associated subscriptions* with a unique identifier for each row. Furthermore, Applicants have been unable to locate in Underwood and/or Powell any teaching regarding mapping column values to *subscribed predicates*. If the Examiner elects to maintain the present rejection of claim 16, Applicants respectfully request the Examiner to identify with more specificity what in Underwood and/or Powell is being relied upon for a teaching of *associated subscriptions* and *subscribed predicates*.

Claim 17

Claim 17 requires opening *a pool of serializable transactions* on the central DBMS server. The Official Action appears to rely on Underwood col. 25 lines 9, col. 123 lines 38-43, and col. 194 lines 15-16 for a teaching of such limitations. Underwood at col. 25 teaches that every time a package receives a method call a new thread is created to service the method call. Underwood further indicates that if the number of incoming concurrent calls exceeds 100, then the excess calls are serialized. There appears to be no indication that these method calls are transactions on a central DBMS or that a pool of transactions on a central DBMS server are opened. Furthermore, Underwood at col. 123 and col. 194 does not appear to provide the missing elements. In particular,

Underwood at col. 123 appears to teach a transaction management service to coordinate transactions across one or more resource managers. At col. 194, Underwood appears to teach execution architecture services that provide either an interface between the application and some system component, or an interface connecting application components. But, again there appears to be no teaching regarding opening *a pool of serialized transactions* on the central DBMS server.

If the Examiner elects to maintain the present rejection Applicants respectfully request the Examiner to identify with more specificity what in Underwood and/or Powell is being relied upon for *the pool of serializable transactions*. Furthermore, Applicants respectfully request the Examiner to explain how Underwood and/or Powell operate in respect to the identified pool of serializable transactions in order to satisfy the other limitations of claim 17 that operate in respect to the transactions of the pool.

Conclusion

In view of the foregoing remarks, it is submitted that this application is in a condition for allowance. Action to that end is hereby solicited.

Applicants respectfully request a two month extension of time to respond to the Office Action dated March 7, 2006, and hereby authorize the Commissioner to debit Deposit Account No. 10-0435 for the \$225 fee associated with a two month response (small entity). The Commissioner is further authorized to credit any overpayment or debit any additional fees as necessary to Deposit Account No. 10-0435 with reference to our matter 27573-73466.

Respectfully submitted,
BARNES & THORNBURG LLP



Bradford G. Addison
Attorney Reg. No. 41,486

Indianapolis, IN
(317) 231-7436

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